

# EGS Abstract for Nice, April, 1998

## TEMPORAL VARIATIONS OF THE GEOPOTENTIAL: ATMOSPHERIC EXCITATION

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The Earth is a complex system with dynamical subsystems (such as the overlying fluid hydrosphere and atmosphere, underlying metallic core, and mantle) with complicated interactions among them (such as the melting of glaciers, sea level rise, and post-glacial rebound). Changes in the inertia tensor of the solid Earth are brought about by interfacial stresses, the gravitational attractions associated with astronomical objects and mass redistributions in the Earth's fluid and solid region. As the Earth's gravitational field changes only in response to net mass redistribution, observations and analysis of the Earth's time varying global gravitational field permits the isolation and study of the changing mass distributions and serves as a geophysical indicator. Intraseasonal through inter-annual variations in the Earth's gravitational field are investigated through the analysis of LAGEOS I satellite laser ranging measurements and are compared with those produced by atmospheric mass redistribution as inferred from global surface pressure data from the National Center for Environmental Prediction (NCEP). The technique of Singular Spectrum Analysis (SSA) is applied; implications of results will be discussed.

### Submittal Information

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2. G7 Joint EGS/AGU Symposium on geodetic observation and geophysical interpretation of mass movements in the Earth's system  
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3. A. Geiger
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### Abstracts to be submitted on or before December 15, 1997 to

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